IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Van Liere	Docket No.:	NL 000278
Serial Number:	09/864,107	Examiner:	Wang, Jin Cheng
Filing Date:	May 24, 2001	Art Unit:	2672
Title:	Method and apparatus for shorthand processing of medical images ...		

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Appeal Brief

This Appeal Brief follows a final Office action mailed from the U.S. Patent and Trademark Office on January 23, 2007 and Applicant's Notice of Appeal submitted April 24, 2007.

Applicant believes that a fee in the amount of $500.00 is due under 37 C.F.R. §41.20(b)(2).

1. Real party in interest

Koninklijke Philips Electronics N.V. is the real party in interest in this case.

2. Related appeals and interferences

No prior or pending appeals, interferences, or judicial proceedings are known to Appellant, Appellant's legal representative, or Assignee which may directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal in the above-referenced case.

3. Status of claims

Claims 1-3, 5-12, 14-19, 25-30, and 32-33 were rejected in the final Office action mailed January 23, 2007, which rejection was maintained in the Advisory Action mailed April 3, 2007.

Claims 1-3, 5-12, 14-19, 25-30, and 32-33 are pending, and are here appealed.

4. Status of amendments

No amendments to the claims were made in Appellant's Amendment and Response of March 15, 2007.

5. Summary of claimed subject matter

Claim 1 is directed to a method for providing and processing a cursored user interaction with a spatially displayed medical image and producing graphics related data on the medical image. The method includes the steps of: providing a menu-less graphical interface [specification as filed p. 3 lines 22-25]; displaying, essentially unobstructed, the medical image in a substantial portion of the graphical interface without the presence of menus, toolbars and control panels on the graphical interface [specification as filed p. 3 lines 22-25]; controlling a mouse computer interface device having at least one button [specification as filed p. 3 lines 7-11]; displaying a pointer symbol on the graphical interface, in which the pointer symbol represents a current position of the mouse on the graphical interface [specification as filed p. 6 lines 7-21 and FIG. 3]; tracking a status of each of the at least one button [specification as filed p. 4 lines 3-30]; detecting a position of

the mouse, in which the position detection step is activated upon actuation of one of the at least one button [specification as filed p. 5 lines 13-22 and p. 11 lines 7-8]; generating one of a plurality of different measurement graphics related to a predefined set of measurement operations on the medical image upon at least one actuation of the at least one button [specification as filed p. 4 line 31 to p. 6 line 6]; when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, enabling the generation of different measurement graphics based only upon actuation of the at least one button of the mouse when the pointer symbol is situated on the medical image such that the measurement graphics are generated without movement of the pointer symbol outside of the medical image [specification as filed p. p. 6 line 7 to p. 10 line 29 and FIGS 3-9], and enabling the generation of the at least three measurement graphics without requiring a user to define in advance the type of measurement graphic being generated [specification as filed p. 6 lines 2-6], in which one of the measurement graphics is an angle value quantity which is assigned to a middle point of a continuous triple-point actuating/positioning [specification as filed p. 7 lines 4-27, p. 11 lines 13-14, and FIG. 5].

Claim 10 is directed to an apparatus arranged to provide and process a cursored user interaction with a spatially displayed medical image [specification as filed p. 2 line 31 to p. 3 line 6 and FIG. 1]. The apparatus includes: a menu-less graphical interface arranged to display, essentially unobstructed, the medical image in a substantial portion of the graphical interface without the presence of menus, toolbars and control panels on the graphical interface [specification as filed p. 3 lines 22-25]; a pointing device having at least one button [specification as filed p. 3 lines 7-11], in which the pointing device is represented on the graphical interface by a standardized pointer symbol and in which the pointer symbol represents a current position of the pointing device within the context of the graphical interface [specification as filed p. 6 lines 7-21 and FIG. 3]; a processor configured to detect an actuation of each of the at least one button of the pointing device and track positions of the pointing device [specification as filed p. 2 line 31 to p. 3 line 6, p. 4 lines 3-30, p. 5 lines 13-22, p. 11 lines 7-8, and FIG. 1]; a processor-internal list of measurement operations, the measurement operations being performed upon at least one actuation of the at least one button and producing at least three corresponding, different measurement graphics on the medical image [specification as filed p. 4 line 31 to p. 6 line 6], the processor being arranged

to produce, when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, the at least three different measurement graphics based on the list of measurement operations only upon actuation of the at least one button of the pointing device when the pointer symbol is situated on the medical image such that the measurement graphics are produced without movement of the pointer symbol outside of the medical image [specification as filed p. p. 6 line 7 to p. 10 line 29 and FIGS 3-9]; and assigning means for assigning an angle value quantity to a middle point of a continuous triple-point actuating/positioning specification as filed p. 7 lines 4-27, p. 11 lines 13-14, and FIG. 5].

6. Grounds of rejection to be reviewed on appeal

6.1 Rejection of claims 1-3, 5-12, 14-19, 25-30, and 32-33 under 35 U.S.C. §103(a)

Independent claims 1 and 10 and dependent claims 2-3, 5-9, 11-12, 14-19, 25-30, and 32-33 stand rejected under 35 U.S.C. §103(a) as being obvious in view of Echerer et al. (U.S. patent number 5,740,267 issued April 14, 1998) in combination with Fenster et al. (U.S. patent number 5,454,371 issued October 3, 1995), Stockham et al. (U.S. patent number 6,081,267 issued June 27, 2000), and Buxton et al. (U.S. patent number 5,798,752 issued August 25, 1998).

7. Argument

7.1 35 U.S.C. §103(a)

7.1.1 Introduction: history of prosecution

Claims 1-19 were pending in this application and claims 1-4, 10-13, and 19 were initially rejected under 35 U.S.C. §102(b) in view of Echerer et al. (U.S. patent number 5,740,267) in an Office action mailed April 25, 2003. Claims 5-9 and 14-18 were rejected in this Office action under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267) and Fenster et al. (U.S. patent number 5,454,371). The specification and claim 19 were objected to as having clerical errors that needed correction.

Applicant amended claims 1, 10, and 19 and traversed rejection of claims 1-19 in an Amendment and Response submitted June 30, 2003.

Rejection of claims 1-4, 10-13, and 19 was maintained under 35 U.S.C. §102(b) in view of Echerer et al. (U.S. patent number 5,740,267) in a final Office action mailed July 24, 2003. Rejection of claims 5-9 and 14-18 was maintained under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267) and Fenster et al. (U.S. patent number 5,454,371) in this Office action. Objections to the specification and claim 19 were withdrawn in this Office action. Applicant amended claims 1 and 10 and traversed rejection of claims 1-19 in an Amendment and Response dated September 25, 2003.

Amendments to claims 1 and 10 and Applicant's arguments were not entered according to an Advisory Action mailed October 21, 2003. A Request for Continued Examination was submitted November 8, 2003 and amendment to claims 1 and 10 and Applicant's arguments were entered and acknowledged in a non-final Office action mailed December 3, 2003.

Rejection of claims 1-4, 10-13, and 19 under 35 U.S.C. §102(b) in view of Echerer et al. (U.S. patent number 5,740,267) was withdrawn, and rejection of claims 5-9 and 14-18 under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267) and Fenster et al. (U.S. patent number 5,454,371) were also withdrawn in an Office action mailed December 3, 2003. New rejection of claims 1-19 under 35 U.S.C. §103(a) in view of Echerer et al. (U.S. patent number 5,740,267) in combination with Fenster et al. (U.S. patent number 5,454,371) and Cable (U.S. patent number 6,614,452) was imposed in the Office action mailed December 3, 2003. Applicant amended claims 1 and 10-19, added new claims 20-22, and traversed rejection of claims 1-19 in an Amendment and Response submitted March 5, 2004.

Rejection of claims 1-22 was maintained under 35 U.S.C. §103(a) in view of Echerer et al. (U.S. patent number 5,740,267) in combination with Fenster et al. (U.S. patent number 5,454,371), and Cable (U.S. patent number 6,614,452) in a final Office action mailed April 6, 2004. Claims 1-22 were further rejected under 35 U.S.C. §112 ¶1, enablement, and under 35 U.S.C. §112 ¶2. Applicant amended claims 1, 10, 20, and 22 and traversed rejection of claims 1-22 in an Amendment and Response submitted April 29, 2004.

An Advisory Action mailed May 7, 2004 stated that amendments made to claims 1, 10, 20, and 22 and Applicant's arguments did not place the application in a condition for allowance. A Request for Continued Examination was submitted May 19, 2004 with amendment to claims 1, 10, 20, and 22.

Applicant's arguments were entered and acknowledged in a final Office action mailed July 7, 2004. Rejection of claims 1-22 was maintained under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267), Fenster et al. (U.S. patent number 5,454,371), and Cable (U.S. patent number 6,614,452) in this Office action mailed July 7, 2004. Rejection of claims 1-22 was maintained under 35 U.S.C. §112 ¶1, enablement, and under 35 U.S.C. §112 ¶2. Applicant amended claims 1 and 10, added new claims 23-24, and traversed rejection of claims 1-22 in an Amendment and Response submitted August 30, 2004.

Amendments to claims 1 and 10, new claims 23-24, and Applicant's arguments were not entered according to an Advisory Action mailed October 19, 2004. A Request for Continued Examination was submitted November 18, 2004 and amendment to claims 1 and 10, newly added claims 23-24, and Applicant's arguments were entered and acknowledged in a non-final Office action mailed January 26, 2005.

Rejections of claims 1-22 under 35 U.S.C. §112 ¶1, enablement, and under 35 U.S.C. §112 ¶2 were withdrawn in the Office action mailed January 26, 2005. Claims 1-24 were rejected under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740.267) and Fenster et al. (U.S. patent number 5,454,371) in this Office action.

Applicant amended claims 1, 9, 10, 23, and 24, canceled claims 20 and 22, and traversed rejection of claims 1-19, 21, and 23-24 in an Amendment and Response submitted March 16, 2005. An Amendment and Response submitted April 20, 2005 explained that the Amendment and Response of March 16, 2005 was misplaced by the U.S. Patent and Trademark Office (PTO), and that the PTO requested re-submission of the Amendment and Response of March 16, 2005. The April 20, 2005 Amendment and Response was a re-submission of the March 16, 2005 Amendment and Response.

Rejection of claims 1-19, 21, and 23-24 was maintained under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267) and Fenster et al. (U.S. patent number 5,454,371) in a final Office aetion mailed May 17, 2005. Applicant

amended claims 1, 9-12, and 14-18, canceled claims 4, 13, and 20-24, and traversed rejection of claims 1-3, 5-12, and 14-19 in an Amendment and Response submitted July 6, 2005. A telephonic conference with the Examiner was held on July 28, 2005 regarding claim 1 and prior art reference Echerer et al. (U.S. patent number 5,740,267).

Amendments to claims 1, 9-12, and 14-18 and Applicant's arguments were not entered according to an Advisory Action mailed September 6, 2005. A Request for Continued Examination was submitted August 15, 2005 with an Amendment to claims 1, 9-12, and 14-18.

Applicant's arguments were entered and acknowledged in a non-final Office action mailed November 1, 2005. Rejection of claims 1-3, 5-12, and 14-19 under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267) and Fenster et al. (U.S. patent number 5,454,371) was withdrawn in this Office action. New rejection of claims 1-3, 5-12, and 14-19 under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267), Fenster et al. (U.S. patent number 5,454,371), and Buxton et al. (U.S. patent number 5,798,752) was imposed in this Office action. Applicant amended claims 1, 9-12, and 14-18, added new claims 25-33, and traversed rejection of claims 1-3, 5-12, and 14-19 in an Amendment and Response submitted January 18, 2006.

Rejection of claims 1-3, 5-12, and 14-19 under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267), Fenster et al. (U.S. patent number 5,454,371), and Buxton et al. (U.S. patent number 5,798,752) was withdrawn in a final Office action mailed March 14, 2006. New rejection of claims 1-3, 5-12, 14-19, 26-30, and 32-33 under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267), Fenster et al. (U.S. patent number 5,454,371), and Killcommons et al. (U.S. patent number 6,424,996) was imposed in this Office action. New rejection of claims 25 and 31 under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267), Fenster et al. (U.S. patent number 5,454,371), Buxton et al. (U.S. patent number 5,798,752) and Killcommons et al. (U.S. patent number 6,424,996) was imposed, and claims 26 and 32 were rejected under 35 U.S.C. §112 ¶2 in this Office action.

Applicant amended claims 10, 26, and 32 and traversed rejection of claims 1-3, 5-12, 14-19, and 24-33 in an Amendment and Response submitted May 12, 2006.

An Advisory Action mailed June 23, 2006 states that amendments to claims 10, 26, and 32 and Applicant's arguments were not entered. A Request for Continued Examination was submitted July 24, 2006 along with an Amendment and Response that amended claims 1 and 25 and traversed rejection of claims 1-3, 5-12, 14-19, and 24-33. Amendment to claims 1 and 25 and Applicant's arguments were entered and acknowledged in a non-final Office action mailed September 20, 2006.

Rejection of claims 1-3, 5-12, 14-19, 26-30, and 32-33 under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267), Fenster et al. (U.S. patent number 5,454,371), and Killeommons et al. (U.S. patent number 6,424,996) was withdrawn in the Office action mailed September 20, 2006, as was rejection of claims 25 and 31 under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267), Fenster et al. (U.S. patent number 5,454,371), Buxton et al. (U.S. patent number 5,798,752) and Killcommons et al. (U.S. patent number 6,424,996).

New rejection of claims 1-3, 5-12, 14-19, 26-30, and 32-33 under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267), Stockham et al. (U.S. patent number 6,081,267 issued June 27, 2000), and Weng et al. (U.S. patent number 5,588,435) was imposed in the Office action mailed September 20, 2006. New rejection of claims 25 and 31 under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267), Fenster et al. (U.S. patent number 5,454,371), Stoekham et al. (U.S. patent number 6,081,267 issued June 27, 2000), and Buxton et al. (U.S. patent number 5,798,752) was imposed in this Office action. Rejection of claims 26 and 32 was maintained under 35 U.S.C. §112 ¶2 in this Office action. Applicant amended claims 1 and 10, canceled claims 25 and 31, and traversed rejection of claims 1-3, 5-12, 14-19, 26-30, and 32-33 in an Amendment and Response submitted December 8, 2006.

Rejection of claims 26 and 32 under 35 U.S.C. §112 ¶2 was withdrawn in a final Office action mailed January 23, 2007. Rejection of claims 1-3, 5-12, 14-19, 26-30, and 32-33 under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267), Fenster et al. (U.S. patent number 5,454,371), Stockham et al. (U.S. patent number 6,081,267 issued June 27, 2000), and Buxton et al. (U.S. patent number 5,798,752) was maintained in this final Office action. Applicant traversed rejection of claims 1-3, 5-12, 14-19, 26-30, and 32-33 in an Amendment and Response submitted March 15, 2007.

An Advisory Action mailed April 3, 2007 stated that Applicant's arguments in the Amendment and Response submitted March 15, 2007 did not place the application in condition for allowance. Applicant submitted a Notice of Appeal on April 24, 2007.

7.1.2 Characterization of cited prior art

The Office action of January 23, 2007 rejects claims 1-3, 5-12, 14-19, 26-30, and 32-33 as obvious in view of the combination of Echerer et al. (U.S. patent number 5,740,267), Fenster et al. (U.S. patent number 5,454,371), Stockham et al. (U.S. patent number 6,081,267 issued June 27, 2000), and Buxton et al. (U.S. patent number 5,798,752). These references are characterized below in Section 7.1.3.1.

The subject matter of the present independent claims is summarized in Section 5 above.

7.1.3 Claims 1-3, 5-12, 14-19, 26-30, and 32-33

Appellant shows below that claims 1-3, 5-12, 14-19, 26-30, and 32-33 are not obvious in view of the combination of Eeherer, Fenster, Stockham, and Buxton.

As a preliminary matter, the Supreme Court in *Graham v. John Deere*, 383 U.S. 1 provided an analytical construct to be used when determining whether claims are obvious under 35 U.S.C. §103(a) in view of prior art. One aspect of this analytical construct includes first characterizing eaeh of the prior art referenees, as a background for legal analysis of the combination of the cited references which is herc found in Section 7.1.3.2.

7.1.3.1 Characterization of prior art references

Echerer et al. (U.S. patent number 5,740,267 issued April 14, 1998)

Echerer shows a system for processing a radiograph that stores an image that cannot be modified and also stores a seeond copy of the image in random access memory for display along with storing enhancements made to the second copy of the image in a separate data file (Echerer et al., Abstract). Enhancements to the image are applied to the displayed image as an overlay, rather than being stored as a copy of the enhaneed image (Ibid., Abstract).

Echerer shows two different system eonfigurations for performing an analysis of an image (Ibid., column 9 lines 56-64 and column 10 lines 1-10). In either configuration, there is present manipulation controls, i.e., menus, buttons, slides, and adjustment tools, that are used for analysis of the image. (Ibid., column 10 lines 1-10 and column 11 lines 39-46).

Once an image is selected, the image is analyzed either manually or automatically (Ibid., column 9. lines 65-66). Manual analysis of an image allows a user to zoom-in or zoom-out on specific areas of the image. To perform a manual zoom analysis, a user moves a mouse to the User Zoom image and places the mouse on the User Zoom slide bar, and while holding down the left mouse button, slides the mouse causing the User Zoom image to be magnified (Ibid., column 12 lines 8-21). Once the User Zoom slide bar is activated, continued manipulation of the User Zoom slide bar zooms in and zooms out of the image (Ibid., column 12 lines 30-33).

A manual analysis also allows a user to determine certain measurements within the image. For example, to measure a distance, a user presses the "Distance" button on the Manual Analysis menu and the CPU is instructed by the user to report the coordinates of the next two consecutive points, indicated as "clicks" of a left mouse button (Ibid., column 13 lines 32-49). To measure an angle, the user presses the "Measure Angle" button on the Manual Analysis menu and the user must them click the left mouse cursor on two existing lines that have been previously drawn (Ibid., column 15 lines 16-19).

Echerer shows that to retain data related to the above measurements, a label must be made (Ibid., column 15 lines 32-34). To make a label, the user presses the "Make Label" button, causing a text box to appear in the upper left hand corner of the image (Ibid., column 13 lines 67 to column 14 line 1). The user must type the desired measurement into the text box (Ibid., column 14 line 1). The user may then reposition the label by pressing the "Move Label button" (Ibid., column 14 lines 13-14). When this button is selected, the user then clicks the mouse cursor on the Label to be moved and then "drags" the label to the new location and releases the mouse button (Ibid., column 14 lines 14-25).

In contrast to the manual analysis function, the automatic analysis function shown in Echerer is rigidly structured with respect to possible functions that can be performed (Ibid., column 17 lines 7-9). For an automatic analysis, points are collected, and brightness, contrast, and histogram equalization can be performed as well as the User Zoom function (Ibid., column 17 lines 9-11). However, no other drawing and calculation features are available (Ibid., column 17 lines 11-13).

Thus, in an automatic analysis, an analysis file merely includes a set of points and does not include any drawings or calculations (Ibid., column 17 lines 17-19). The set of

points are stored in the analysis file and a separate set of files containing a set of instructions detailing what to do with the set of points to produce a given drawing and calculation is also stored. In order for a user to see a specific analysis of the image, a set of prompts appears and asks the user to select from a list the specific analysis that the user wishes to see (Ibid., column 17 lines 54-56).

For example, Echerer shows that in chiropractic practice, a common image is a cervical lateral view and common measurements are a Stress line calculation and a Lordois measurement (Ibid., column 17 lines 20-25 and Fig. 3). Echerer states that if the Stress Line calculation prompt is selected, then the "Cervical Stress Line Automatic Analysis Data File" is opened to display this analysis (Ibid., column 17 line 60 to column 18 line 13). If the Lordois measurement prompt is selected, the data file containing the information for the "Cervical Lateral Lordois Automatic Analysis Data File" is opened to display this analysis (Ibid., column 18 lines 14-33). Thus in automatic analysis, the user scrolls through a menu and "clicks" with the mouse to select the desired prompt, causing the computer to open a certain analysis file to perform the selected measurement, i.e., the user is defining in advance the type of measurement graphic to be generated.

Nowhere does Echerer teach or suggest a method for providing and processing a cursored user interaction with a spatially displayed medical image and producing graphics related data on the medical image that includes the step: when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, enabling the generation of different measurement graphics based only upon actuation of the at least one button of the mouse when the pointer symbol is situated on the medical image such that the measurement graphics are generated without movement of the pointer symbol outside of the medical image, to which claim 1 is directed.

The final Office action mailed January 23, 2007 on p. 9 admits that Eacherer fails to teach or suggest enabling the generation of the at least three measurement graphics without requiring a user to define in advance the type of measurement graphic being generated, in which one of the measurement graphics is an angle value quantity which is assigned to a middle point of a continuous triple-point actuating/positioning, to which claim 1 is directed.

Nowhere does Echerer teach or suggest an apparatus arranged to provide and process a cursored user interaction with a spatially displayed medical image including a processor

being arranged to produce, when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, at least three different measurement graphics based on the list of measurement operations only upon actuation of the at least one button of the pointing device when the pointer symbol is situated on the medical image such that the measurement graphics are produced without movement of the pointer symbol outside of the medical image, to which claim 10 is directed.

The final Office action mailed January 23, 2007 on p. 9 admits that Echerer fails to teach or suggest an assigning means for assigning an angle value quantity to a middle point of a continuous triple-point actuating/positioning, to which claim 10 is directed.

The final Office action mailed January 23, 2007 on p. 2 and the Advisory Action mailed April 3, 2007 on p.2 allege that Echerer column 12 lines 20-30, column 13, lines 25-50, and column 15 lines 15-35 teaches using a mouse only without activating action bars or image fields, or control panels. Applicant respectfully traverses.

Applicant respectfully asserts that column 12 lines 20-30 fails to teach or suggest using a mouse only without activating action bars or image fields, or control panels, for the reasons shown below.

Echerer, column 12 lines 20-30, shows the process of how a user would simultaneously zoom-in or zoom-out of the System Zoom image and the User Zoom image. A factual analysis of this section as a whole shows that the display system shown in Echerer has the following configuration: data operations and control area located across the top of the monitor; System Zoom Image display area on the lower left side of the monitor; and User Zoom Image display area on the lower right side of the monitor (Ibid., column 11 lines 39-46 and Fig.1). This configuration clearly shows that Echerer's control area is involved for performing any zooming function in a manual analysis.

Further, Echerer shows that to perform a zoom analysis of an area of interest on the image requires that a user move a mouse to the User Zoom image and place the mouse on the User Zoom slide bar, and, while holding down the left mouse button, slide the mouse causing the User Zoom image to be magnified (Ibid., column 12 lines 8-21). Even further, Eeherer states, "[o]nce the User Zoom slide bar is activated, continued manipulation of the User Zoom slide bar zooms in and zooms out of the image." Ibid., column 12 lines 30-33; emphases added.

Therefore a factual analysis of this section of Echerer demonstrates that column 12 lines 20-30 fails to teach or suggest using a mouse only without activating action bars or image fields, or control panels.

Applicant now shows that column 13, lines 25-50 and column 15 lines 15-35 of Echerer also fail to teach or suggest using a mouse only without activating action bars or image fields, or control panels.

Echerer in column 13 lines 25-50 in fact shows how to perform a distance measurement:

> For example, if the user wishes to measure a distance, two points, called "Landmarks," are required from the image across whose span the distance between those Landpoints is calculated. By pressing the "Distance" button on the Manual Analysis menu, the CPU is instructed by the user to report the coordinates of the next two consecutive points, indicated in a preferred embodiment as "clicks" of a left mouse button. The user then positions the mouse cursor on the first desired Landmark on the System Zoom image or on the User Zoom image and presses the left mouse button. The user then repositions the mouse cursor on another image location and again presses the left mouse button. [Ibid column 13 lines 28-40; emphasis added]

Echerer in column 15 lines 15-35 shows how to perform an angle measurement:

> When the user decides to measure an angle, he presses the "Measure Angle" button on the Manual Analysis Menu. The user then must click the left mouse cursor on two existing lines that have been drawn previously. [Ibid., column 15 lines 15-20; emphasis added]

Factual analyses of these sections of Echerer demonstrate that Echerer fails to teach or suggest using a mouse only without activating action bars or image fields, or control panels, to which claims 1 and 10 are directed. In contrast to the allegations in the final Office action and the Advisory Action, these sections of Echerer explicitly state that control panels, toolbars, buttons, and menus are required to perform these measurements described above.

The final Office action mailed January 23, 2007 on pp. 2-3 and the Advisory Action mailed April 3, 2007 on p. 2 allege that Echerer teaches and suggests enabling the generation of the measurement graphics without requiring the user to define the type of graphic being generated through the automatic analysis file in which the measurement graphic is automatically generated. Applicant respectfully traverses.

Echerer states that the automatic analysis function is rigidly structured with respect to possible functions that can be performed (Ibid., column 17 lines 7-9). For an automatic analysis, points are collected, and brightness, contrast, and histogram equalization can be performed as well as the User Zoom function (Ibid., column 17 lines 9-11). "However, no other drawing and calculation features are available in the Automatic Analysis function." Ibid., column 17 lines 11-13; emphasis added. Therefore merely defining a set of points does not allow a user to generate drawings and calculations, as Echerer states that an analysis file merely includes a set of points and does not include any drawings and calculations (Ibid., column 17 lines 17-19).

Echerer states that the set of points are stored in the automatic analysis file and a separate set of files containing a set of instructions detailing what to do with the set of points to produce a given drawing and calculation is also stored, i.e., the automatic analysis file containing the points, and the files containing the instructions for generating drawings and calculations are stored separately. Thus, in order for a user to see a specific analysis of the image in the automatic analysis mode, a set of prompts appears and asks the user to select from a list the specific analysis that he wishes to see (Ibid., column 17 lines 54-56).

For example, Echerer states that in chiropractic practice, a common image is a cervical lateral view and common measurements are a Stress line calculation and a Lordois measurement (Ibid., column 17 lines 20-25 and Fig. 3). Echerer states that if the Stress Line calculation prompt is selected, then the "Cervical Stress Line Automatic Analysis Data File" is opened to display this analysis (Ibid., column 17 line 60 to column 18 line 13). If the Lordois measurement prompt is selected, the data file containing the information for the "Cervical Lateral Lordois Automatic Analysis Data File" is opened to display this analysis (Ibid., column 18 lines 14-33).

Thus, in contrast to the allegations in the final Office action and in the Advisory Action, the user in Echerer's automatic analysis mode scrolls through a menu and "clicks" with the mouse to select the desired prompt, causing the computer to open a certain analysis file to perform the selected drawing or calculation. Therefore in the automatic analysis mode, a user of Echerer's automatic analysis mode cannot generate a drawing or calculation without using the mouse to scroll through a list of prompts to select a drawing or calculation

to be performed, i.e., the user is defining in advanee the type of drawing or calculation to be generated.

Therefore, Echerer fails to teach or suggest enabling the generation of the measurement graphics without requiring the user to define in advance the type of graphic being generated, to which claim 1 is directed.

Fenster et al. (U.S. patent number 5,454,371, issued October 3, 1995)

Fenster et al. shows a method and system for converting two-dimensional images of a target volume represented by an array of pixels into a three-dimensional image represented by a volumetric image array (Fenster et al., column 1 lines 55-60). The array of pixels is transformed into an image array so that each slice of the image array provides sufficient data to construct an image slice (Ibid.., eolumn 1 lines 62-65). A z-slice of each image array is extracted, and the position of each pixel of the z-slice in a volumetric image array is computed (Ibid.,, column 1 lines 66-67; column 2 line 1). A grey-level or color value for the pixels of the z-slice is mapped into corresponding pixels of the volumetric image array (Ibid.,, column 1 lines 2-4). These steps are repeated until the z-slices of the image array have been processed to complete the volumetric image array (Ibid.,, column 1, lines 4-7).

Fenster shows a display window having menus, toolbars, and buttons (Ibid., column 21, lines 7-10, Fig. 20a # **336** and **338**, Fig. 26, and Fig. 27). Fenster shows that if the mouse is clicked when it is not within the main display window, the display module determines whether an option icon has been selected (Ibid., column 21 lines 9-12). The available option icons are: "Reset", "Views A to C", "Remember", "Snapshot", "Animation", "Indicator", "Orientation", "Fast", "Smooth", "Win", "Lev", "Magnify" and "Measure" (Ibid., column 21 lines 13-16). Fenster states, "FIG. **26** illustrates most of these option icons in a control display window positioned beside the main display window." Ibid., column 21 lines 16-18; emphasis added.

Fenster shows that for a measurement to be performed on the image, the Measure icon must first be sclected, causing a measure display window to appear on the screen (Ibid., column 23 lines 25-39 and FIG. 27).

Nowhere does Fenster teach or suggest a method for providing and proccssing a cursored user interaction with a spatially displayed medical image and producing graphics related data on the medical image including a menu-less graphical interface, to which claim

1 is directed. Fenster fails to teach or suggest displaying, cssentially unobstructed, the medical image in a substantial portion of the graphical interface without the presence of menus, toolbars and control panels on the graphical interface, which is the subject matter of claim 1. In contrast to the subject matter of claim 1, Fenster teaches a display window having menus, toolbars, and buttons (Ibid., column 21, lines 7-10, Fig. 20a # **336** and **338**, Fig. 26, and Fig. 27).

Nowhere does Fenster teach or suggest a method for providing and processing a cursored user interaction with a spatially displayed medical image and produeing graphics related data on the medical image that ineludes the step: when the medical image is displayed on the graphical interface without thc presence of menus, toolbars and control panels, enabling the generation of different measurement graphics based only upon actuation of the at least one button of the mouse when the pointer symbol is situated on the medical image such that the measurement graphics are generated without movement of the pointer symbol outside of the medical image, to which claim 1 is directed. In contrast, to the subject matter of claim 1, Fenster teaches that thc mouse must be moved outside of main display window to select the measurement icon on the control panel and then returned to the main display window to perform measurements on the image (Ibid., column 21 lines 9-12 and column 23 lines 25-26).

The final Office action mailcd January 23, 2007 on p. 9 in fact admits that Fenster fails to teaeh or suggest enabling the generation of at least three measurement graphics without requiring a user to define in advance the type of measurement graphic being generated, in which one of the measurement graphics is an angle value quantity which is assigned to a middle point of a continuous triple-point actuating/positioning, to which claim 1 is direeted. Fenster merely tcaches measuring distances and areas of a three-dimensional image within the most recently moved plane, i.e., only teaches two different measurement graphics (Ibid., column 23 lines 27-29).

Fenster fails to teach or suggest an apparatus arranged to provide and process a cursored user interaction with a spatially displayed medical image ineluding a menu-less graphical interface arranged to display, cssentially unobstructed, the medieal image in a substantial portion of the graphical interface without the presence of menus, toolbars and control panels on the graphical interface, to which claim 10 is directed.

Nowhere does Fenster teach or suggest a processor-internal list of measurement operations, the measurement operations being performed upon at least one actuation of the at least one button and producing at least three corresponding, different measurement graphics on the medical image, to which claim 10 is directed.

Nowhere does Fenster teach or suggest the processor being arranged to produce, when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, the at least three different measurement graphics based on the list of measurement operations only upon actuation of the at least one button of the pointing device when the pointer symbol is situated on the medical image such that the measurement graphics are produced without movement of the pointer symbol outside of the medical image, to which claim 10 is directed.

The final Office action mailed January 23, 2007 on p. 9 admits that Fenster fails to teach or suggest assigning means for assigning an angle value quantity to a middle point of a continuous triple-point actuating/positioning, to which claim 10 is directed.

The final Office mailed January 23, 2007 on p. 6 and the Advisory Action mailed mailed April 3, 2007 on p. 2 allege that FIG. 27 teaches displaying a medical image without the presence of menus, toolbars, and control panels on the graphic interface. Applicant respectfully traverses.

FIG. 27 clearly shows a medical image displayed on a graphic interface having three different control panels (Ibid., FIG. 27). Fenster shows that if the mouse is clicked when it is not within the main display window, the display module determines whether an option icon has been selected (Ibid., column 21 lines 9-12).

This factual analysis demonstrates that Fenster's image is displayed in the presence of menus, toolbars, and control panels on the graphic interface. Therefore, Fenster does not teach or suggest displaying a medical image without the presence of menus, toolbars, and control panels on the graphic interface.

Stockham et al. (U.S. patent number 6,081,267 issued June 27, 2000)

Stockham et al. shows a computerized apparatus for displaying radiological anatomical data that allows a user to stay visually focused on a display monitor where the images are displayed and maximize the display area for images (Stockham et al., column 3 lines 17-22).

Stockham states:

> At the bottom of display screen **30** is an icon bar **40** having a number of primary icons **41-49** therein. Each of these icons is used to initiate system functions and features, such as loading and unloading various studies or accessing help. At the top of display screen **30** there are a number of controls which are related to the speeific study loaded on the display screen. The patient's name identifier **31** is found at the top left, and a number of alternater controls **32-37** are provided adjacent thereto. These controls **32-37** are used to advance to previous and subsequent studies, and to perform basic tasks such as printing, file linking and marking as read. An additional toolbar **50** is loeated at the top right of the screen, and contains a number of image analysis tools. Controls located therein provide tools for measurement of both linear distanee and angle, rectangular ROI, elliptical ROI, pixel value, annotation, local image magnification and staeking (for eine generation). [Ibid., column 5 lines 56 to column 6 line 5; emphases added]

This factual analysis demonstrates that Stockham's screen for displaying radiological images that includes controls, icons, and a toolbar (Ibid., column 5 line 51 to column 6 line 5, FIGS. 1-2 and 6).

Nowhere does Stockham teach or suggest a method for providing and processing a cursored user interaction with a spatially displayed medical image and producing graphics related data on the medical image including displaying, essentially unobstructed, the medical image in a substantial portion of the graphical interface without the presence of menus, toolbars and control panels on the graphical interface, to which claim 1 is directed. In contrast to the subject matter of claim 1, Stockham's screen for displaying radiological images includes controls, icons, and a toolbar (Ibid., column 5 line 51 to column 6 line 5, FIGS. 1-2 and 6).

Nowhere does Stockham teach or suggest a method for providing and processing a cursored user interaction with a spatially displayed medical image and producing graphics related data on the medical image that includes the step: when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, enabling the generation of different measurement graphics based only upon actuation of the at least one button of the mouse when the pointer symbol is situated on the medical image such that the measurement graphics are gencrated without movement of the pointer symbol outside of the medical image, to which claim 1 is directed.

The final Office action mailed January 23, 2007 on p. 9 admits that Stockham fails to teach or suggest enabling the generation of the at least three measurement graphics without requiring a user to define in advance the type of measurement graphic being generated, in which one of the measurement graphics is an angle value quantity which is assigned to a middle point of a continuous triple-point actuating/positioning, to which claim 1 is directed.

Nowhere does Stockham teach or suggest an apparatus arranged to provide and process a cursored user interaction with a spatially displayed medical image including a menu-less graphical interface arranged to display, essentially unobstructed, the medical image in a substantial portion of the graphical interface without the presence of menus, toolbars and control panels on the graphical interface, to which claim 10 is directed.

Stockham fails to teach or suggest a processor being arranged to produce, when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, the at least three different measurement graphics based on the list of measurement operations only upon actuation of the at least one button of the pointing device when the pointer symbol is situated on the medical image such that the measurement graphics are produced without movement of the pointer symbol outside of the medical image, to which claim 10 is directed.

The final Office action mailed January 23, 2007 on p. 9 in fact admits that nowhere does Stockham teach or suggest assigning means for assigning an angle value quantity to a middle point of a continuous triple-point actuating/positioning, to which claim 10 is directed.

The final Office action mailed January 23, 2007 on pp.8-9 and the Advisory Action mailed April 3, 2007 on p. 3 allege that Stockham column 3 lines 40-45 teaches providing an angle measurement without the presence of menus, toolbars, and control panels. Applicant respectfully traverses.

In fact, the cited section of Stockham merely states:

> The invention also comprises a method for displaying a variable number of radiological images on a computer screen where a user may directly activate common functions and capabilities without accessing additional screen pages or pull down menus. [Ibid., column 3 lines 40-45]

Factual analysis of this section of Stockham demonstrates that this section fails to teach or suggest providing an angle measurement. The term "angle measurement" is not

even mentioned within this section of Stockham. Further, nowhere does this section teach or suggest providing an angle measurement without the presence of toolbars and control panels, to which claims 1 and 10 are directed. In contrast to the allegations in the final Office action and Advisory action, Stockham shows only a screen for displaying radiological images that includes controls, icons, and a toolbar (Ibid., column 5 line 51 to column 6 line 5, FIGS. 1-2 and 6).

Therefore this cited section of Stockham fails to teach or suggest providing an angle measurement without the presence of menus, toolbars, and control panels.

The final Office action mailed January 23, 2007 on pp.8-9 and the Advisory Action mailed April 3, 2007 on p. 3 allege that Stockham column 6 lines 1-5 teaches enabling the generation of at least three measurement graphics without requiring the user to define in advance the type of measurement graphic being generated. Applicant respectfully traverses.

Column 6 line 1 begins in the middle of a sentence, for clarity and convenience of the reader, Applicant provides below this section of Stockham from column 5 line 67 so as to capture the entire. Stockham states:

> An additional toolbar **50** is located at the top right of the screen, and contains a number of image analysis tools. Controls located therein provide tools for measurement of both linear distance and angle, rectangular ROI, elliptical ROI, pixel value, annotation, local image magnification and stacking (for cine generation). [Ibid., column 5 line 67 to column 6 line 6; emphases added]

In contrast to the allegations in the final Office action and Advisory Action, factual analysis of this section demonstrates that this section shows that a user is required to move a mouse outside the displayed image, click on the desired tool to generate the desired measurement, and then move the mouse inside the displayed image to generate the desired measurement.

Nowhere does this section of Stockham teach or suggest enabling the generation of at least three measurement graphics without requiring the user to define in advance the type of measurement graphic being generated, to which claims 1 and 10 are directed. In fact, this section of Stockham shows only the opposite, viz., that a user is required to move a mouse outside the displayed image, click on the desired tool to generate the desired measurement, and then move the mouse inside the displayed image to generate the desired measurement.

Buxton et al. (U.S. patent number 5,798,752)

Buxton et al. shows methods of operating processor-controlled machines such as computers, and user interface techniques for allowing a user to interact with the machine (Buxton et al., column 1 lines 30-33). The user simultaneously and independently moves the tools with one hand, normally the non-dominant hand (e.g., a right-handed user's left hand) and operates on the visible representation with the other, normally the dominant hand (Ibid., Abstract). In fact, Buxton is entitled, "User Interface Having Simultaneously Movable Tools and Cursor".

Buxton shows that the system has a visual depiction of a set of controllers, such as tool palettes, property palettes, menus, switches, dialog boxes, and sliders (Ibid., column 4 lines 47-49). The controllers in Buxton are collectively referred to as tools, and in some embodiments include transparent click-through tools that are placed over objects on which they are to operate (Ibid., column 4 lines 49-52). Buxton states, " … a button refers to a defined area on the display, which when clicked, causes an operation to occur." Ibid., column 12 lines 49-50. Buxton further shows that a "click-through tool" refers to the tool being applied by clicking through the tool on a visible portion of the visible representation (Ibid., column 11 line 66 to column 12 line 2). Thus Buxton shows a display with menus, buttons, and toolbars.

Buxton shows that the simultaneous and independent movement of the tools and operation on the visible representation is accomplished by using input devices for the user's two hands (Ibid., column 4 line 66 to column 5 line 2). In a specific implementation, the input devices include a trackball for positioning the tools and a mouse for positioning a cursor and initiating actions (Ibid., column 5 lines 2-4).

In the context of a drawing program, Buxton shows tools for creating objects, and tools for copying, modifying, and deleting existing objects (Ibid., column 5 lines 9-14). Buxton shows creating an object on a graphic interface by using a shape palette tool (Ibid., column 13 lines 43-57 and FIG. 4). Buxton states, "…the size of the object in the menu determined the size when it was applied to the application. In many situations, such as when selecting lines, rectangles, circles, and other shapes, one wants to select the generic shape and then speeify its size and position." Ibid., column 13 lines 59-62; emphases added.

Factual analysis of FIG. 4 in Buxton demonstrates that to create a graphic on a graphic interface using Buxton's system requires the following: a user operates a trackball

with a non-dominant hand to activate the shape palette tool containing a set of pre-defined shapes within the display screen; the user simultaneously and independently moves a mouse with a dominant hand to contact the shape palette tool; the user selects with the mouse the desired pre-defined shape from the shape palette tool; and a user places the selected pre-defined shape on the graphic interface.

Nowhere does Buxton teach or suggest a method for providing and processing a cursored user interaction with a spatially displayed medical image and producing graphics related data on the medical image. In fact, the phrase "medical image" is not even mentioned in this reference, to which claim 1 is directed.

Buxton fails to teach or suggest a method including providing a menu-less graphical interface, to which claim 1 is directed. Nowhere does Buxton teach or suggest displaying, essentially unobstructed, the medical image in a substantial portion of the graphical interface without the presence of menus, toolbars and control panels on the graphical interface, to which claim 1 is directed. In contrast to the subject matter of claim 1, Buxton shows only a system that has a visual depiction of a set of controllers, such as tool palettes, property palettes, menus, switches, dialog boxes, and sliders (Ibid., column 4 lines 47-49).

Nowhere does Buxton teach or suggest a method for providing and processing a cursored user interaction with a spatially displayed medical image and producing graphics related data on the medical image that includes the step: when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, enabling the generation of different measurement graphics based only upon actuation of the at least one button of the mouse when the pointer symbol is situated on the medical image such that the measurement graphics are generated without movement of the pointer symbol outside of the medical image, to which claim 1 is directed. In contrast to the subject matter of claim 1, Buxton teaches a display screen with menus, toolbars and control panels and generating a shape using multiple input devices for a user's two hands, for example, a trackball for positioning the tools and a mouse for positioning a cursor and initiating actions.

Buxton fails to teach or suggest enabling the generation of the at least three measurement graphics without requiring a user to define in advance the type of measurement graphic being generated, to which claim 1 is directed. In contrast to the subject matter of

claim 1, Buxton shows only that generating a measurement graphic requires a shape palette tool containing a set of pre-defined shapes within the display screen (Ibid., FIG. 4).

Nowhere does Buxton teaeh or suggest an apparatus arranged to provide and process a eursored uscr interaction with a spatially displayed medieal image including a menu-less graphical interface arranged to display, essentially unobstructed, the medical image in a substantial portion of the graphical interfaee without the presence of menus, toolbars and control panels on the graphical interface, to which claim 10 is directed.

Buxton fails to teach or suggest a processor bcing arranged to produce, when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, at least three different measurement graphics based on the list of measurement operations only upon actuation of the at least one button of the pointing device when the pointer symbol is situated on the medical image such that the measurement graphics are produced without movement of the pointer symbol outside of the medical image, to which claim 10 is directed.

7.1.3.2 Legal analysis of references combined

According to a summary of criteria in the *Manual of Patent Examining Procedure,* "[t]o establish a *prima facie* casc of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine rcference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art rcference (or references when combined) must teach or suggest all the claim limitations. The tcaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." [emphases added] *Manual of Patent Examining Procedure* §2142 (8th Ed. Rev.2, May 2, 2004, "hereinafter M.P.E.P."); *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

A recent decision by the U.S. Supreme Court, *KSR International Co. v. Teleflex Inc.* 550 U.S.____ (2007), discusses criteria for showing a motivation to combine numerous prior art referenees in a determination that a claimed invention is obvious. The U.S. Supreme Court in *KSR* explained that "[t]here is no necessary inconsistency between the idea underlying the TSM [tcaching, success, motivation] test and the *Graham* analysis." *KSR*

International Co. 550 U.S.____ at p. 15. In fact, the court explains "... it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the newly claimed invention does." Id.

Applicant respectfully traverses the above rejection, and shows that the facts of the case and the relevant case law indicate that the invention would not have been obvious to one of ordinary skill in the art at the time the application was filed because the underlying facts show that the criteria for a *prima facie* rejection have not been met.

Failure of the cited prior art to teach or suggest all the claim limitations

To establish a *prima facie* case for obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. M.P.E.P. §2143.03; *In re Royka,* 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Claim 1 is directed in part to a method for providing and processing a cursored user interaction with a spatially displayed medical image and producing graphics related data on the medical image that includes the step: when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, enabling the generation of different measurement graphics based only upon actuation of the at least one button of the mouse when the pointer symbol is situated on the medical image such that the measurement graphics are generated without movement of the pointer symbol outside of the medical image.

Claim 10 is directed in part to an apparatus arranged to provide and process a cursored user interaction with a spatially displayed medical image including a processor being arranged to produce, when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, at least three different measurement graphics based on the list of measurement operations only upon actuation of the at least one button of the pointing device when the pointer symbol is situated on the medical image such that the measurement graphics are produced without movement of the pointer symbol outside of the medical image.

None of the cited prior art references teach or suggest this subject matter of claims 1 and 10, as shown below.

Echerer shows two different system configurations for performing an analysis of an image (Ibid., column 9 lines 56-64 and column 10 lines 1-10). In either configuration, there

is present manipulation controls, i.e., menus, buttons, slides, and adjustment tools, that are used for analysis of the image. (Ibid., column 10 lines 1-10 and column 11 lines 39-46).

Echerer shows a manual analysis mode in which a user determines certain measurements within the image with the use of buttons, menus, and slide-bars. For example, to measure a distance, a user presses the "Distance" button on the Manual Analysis menu and the CPU is instructed by the user to report the coordinates of the next two consecutive points, indicated as "clicks" of a left mouse button (Ibid., column 13 lines 32-49). To measure an angle, the user presses the "Measure Angle" button on the Manual Analysis menu and the user must them click the left mouse cursor on two existing lines that have been previously drawn (Ibid., column 15 lines 16-19).

Echerer shows a rigid automatic analysis mode in which points are collected, and brightness, contrast, and histogram equalization can be performed as well as the User Zoom function (Ibid., column 17 lines 9-11). However, no other drawing and calculation features are available (Ibid., column 17 lines 11-13).

Thus, in an automatic analysis, an analysis file merely includes a set of points and does not include any drawings or calculations (Ibid., column 17 lines 17-19). The set of points are stored in the analysis file and a separate set of files containing a set of instructions detailing what to do with the set of points to produce a given drawing and calculation is also stored. Thus, in order for a user to see a specific analysis of the image, a set of prompts appears and asks the user to select from a list the specific analysis that he wishes to see (Ibid., column 17 lines 54-56). Thus in automatic analysis, the user scrolls through a menu and "clicks" with the mouse to select the desired prompt, causing the computer to open a certain analysis file to perform the selected measurement.

Therefore Echerer fails to teach or suggest a method or apparatus for providing and processing a cursored user interaction with a spatially displayed medical image and producing graphics related data on the medical image that includes the step: when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, enabling the generation of different measurement graphics based only upon actuation of the at least one button of the mouse when the pointer symbol is situated on the medical image such that the measurement graphics are generated without

movement of the pointer symbol outside of the medical image, to which claims 1 and 10 are directed.

Applicant shows below that the other prior art references do not cure these defects of Eeherer.

Fenster shows a display window having menus, toolbars, and buttons (Ibid., column 21, lines 7-10, Fig. 20a # **336** and **338**, Fig. 26, and Fig. 27). Fenster teaches that if the mouse is clicked when it is not within the main display window, the display module determines whether an option icon has been selected (Ibid., column 21 lines 9-12). The available option icons are: "Reset", "Views A to C", "Remember", "Snapshot", "Animation", "Indicator", "Orientation", "Fast", "Smooth", "Win", "Lev", "Magnify" and "Measure" (Ibid., column 21 lines 13-16). Fenster states, "FIG. **26** illustrates most of these option icons in a control display window positioned beside the main display window." Ibid., column 21 lines 16-18; emphasis added.

Fenster shows that for a measurement to be performed on the image, the Measure icon must first be selected, causing a measure display window to appear on the screen (Ibid., column 23 lines 25-39 and FIG. 27).

Thus, Fenster has a display window having menus, toolbars, and buttons, and that the mouse must be moved outside of main display window to select the measurement icon on the control panel and then returned to the main display window to perform measurements on the image (Ibid., column 21 lines 9-12 and column 23 lines 25-26). Therefore Fenster does not cure this defect of Echerer, alone or in combination with the other citcd refercnccs as shown below.

Stockham shows a display screen having the following characteristics:

> At the bottom of display screen **30** is an icon bar **40** having a number of primary icons **41-49** therein. Each of these icons is used to initiate system functions and features, such as loading and unloading various studies or accessing help. At the top of display screen **30** there are a number of controls which are related to the specific study loaded on the display screen. The patient's name identifier **31** is found at the top left, and a number of alternater controls **32-37** are provided adjacent thereto. These controls **32-37** are used to advance to previous and subsequent studies, and to perform basic tasks such as printing, file linking and marking as read. An additional toolbar **50** is located at the top right of the screen, and contains a number of image analysis tools. Controls located therein provide tools for measurement of both linear distance and angle, rectangular ROI, elliptical ROI, pixel value, annotation,

> local image magnification and stacking (for cine generation). [Ibid., column 5 lines 56 to column 6 line 5; emphases added]

This factual analysis demonstrates that Stockham has a screen for displaying radiologieal images that includes controls, icons, and a toolbar, and that a user moves a mouse outside of the medical image to select from the controls, icons, or a toolbar and then returns the mouse to the medical image to generate a measurement graphic. (Ibid., column 5 line 51 to column 6 line 5, FIGS. 1-2 and 6). Therefore, Stockham fails to cure the defects of Echerer and Fenster, alone or in any combination.

Buxton fails to teach or suggest a medical image. In fact, the phrase "medical image" is not even mentioned in Buxton.

Buxton is merely a drawing program. In the context of a drawing program, Buxton shows tools for creating objects, and tools for copying, modifying, and deleting existing objects (Ibid., column 5 lines 9-14). Buxton states that to create an object on a graphic interface, a shape palette tool is used (Ibid., column 13 lines 43-57 and FIG. 4). Buxton states, "...the size of the object in the menu determined the size when it was applied to the application. In many situations, such as when selecting lines, rectangles, circles, and other shapes, one wants to select the generic shape and then specify its size and position." Ibid., column 13 lines 59-62; emphases added.

To create a graphic on a graphic interface using Buxton's system requires the following: a user operates a trackball with a non-dominant hand to activate the shape palette tool containing a set of pre-defined shapes within the display screen; the user simultaneously and independently moves a mouse with a dominant hand to contact the shape palette tool; the user selects with the mouse the desired pre-defined shape from the shape palette tool; and a user places the selected pre-defined shape on the graphic interfaee (Ibid., FIG. 4). Therefore Buxton fails to cure the defects of Echerer, Fenster, and Stockham, alone or in combination.

This factual analysis clearly shows that the combination of the prior art references does not teach or suggest a method or apparatus for providing and processing a cursored user interaction with a spatially displayed medical image and producing graphics related data on the medical image that includes the step: when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, enabling the

generation of different measurement graphics based only upon actuation of the at least one button of the mouse when the pointer symbol is situated on the medical image such that the measurement graphics are generated without movement of the pointer symbol outside of the medical image, to which claims 1 and 10 are directed.

Therefore, by the legal criteria discussed above, the underlying facts of the content of the cited prior art and of the present pending claims show that the prior art fails to teach or suggest all the limitations of the claims of the present invention. Therefore, a *prima facie* case that claims 1and 10 of the present invention are obvious has not been made.

Claims 2-3, 5-9, 11-12, 14-19, 26-30, and 32-33 depend directly or indirectly from claims 1 or 10 and incorporate all of the subject matter of claims 1 or 10 and contain additional subject matter. Therefore these claims also are not obvious in light of the cited references.

For at least these reasons, obviousness of the claims has not been established.

Lack of motivation to combine the cited prior art

The final Office action mailed January 23, 2007 on p. 9 admits that none of Echerer, Fenster, and Stockham, alone or in combination teach or suggest a method or an apparatus including an angle value quantity which is assigned to a middle point of a continuous triple-point actuating/positioning, to which claims 1 and 10 are directed. The final Office action mailed January 23, 2007 on p. 9 and the Advisory Action mailed April 3, 2007 on p. 3 state that Buxton teaches this element of claims 1 and 10 and allege that there is motivation to combine Buxton with Echerer, Fenster, and Stockham. Applicant respectfully traverses.

To establish a *prima facie* case of obviousness, a reasonable expectation of success must be found in the prior art, and not based on Applicant's disclosure. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills,* 916 F.2d 680, 16 USPDQ 1430 (Fed. Cir. 1990).

The U.S. Supreme Court in *KSR International Co. v. Teleflex Inc.* 550 U.S.____ (2007), a decision that issued on April 30, 2007, affirmed the legal principle that the mere fact that each element of a claimed invention could be found within the prior art does not render the claimed invention obvious. The court in that case stated:

.... A patent composed of several elements is not proved obvious merely by

> demonstrating that each of its elements was, indcpendently, known in the prior art. [*KSR International Co.* 550 U.S.____ at p. 14]

According to criteria established in the M.P.E.P., "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." M.P.E.P. §2143.01; emphasis added.

In the case *In re Ratti*, 270 F.2d 810 (CCPA 1959), elaims were directed to an oil seal having a bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. See M.P.E.P. §2143.01. The primary reference relied upon in a rejection based on a combination of references showed an oil seal in which the bore engaging portion was reinforced by a cylindrical sheet metal casing. Sce M.P.E.P. §2143.01. The prior art device required rigidity for operation, whereas the claimed invention required resiliency. See M.P.E.P. §2143.01. The court reversed the rejection, holding that the "... suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." See M.P.E.P. §2143.01 citing *In re Ratti* 270 F.2d at 813.

Similar to the facts in *In re Ratti*, in the present case an attempt to combine the method and apparatus in Buxton with the methods and apparatuses in Echerer, Fenster, and Stockham requires reconstruction and change in the basic principles of operation of the method and apparatus in Buxton, as shown below, and thus there would have been no motivation at the time the application was filed, to combine Buxton with Echerer, Fenster, and Stockham.

The method and apparatus in Buxton show that a user simultaneously and independently moves tools with one hand, normally the non-dominant hand (e.g., a right-handed user's left hand) and operates on a visible representation with the other, normally the dominant hand (Ibid.,. Abstract). In fact, Buxton is entitled, "User Interface Having Simultaneously Movable Tools and Cursor". Thus the principle of operation in Buxton requires two input devices to interact with a graphic interface.

Buxton's system has a visual depiction of a set of controllers, such as tool palettes, property palettes, menus, switches, dialog boxes, and sliders (Ibid., column 4 lines 47-49).

The controllers are collectively referred to as tools, and in some embodiments include transparent click-through tools that are placed over objects on which they are to operate (Ibid., column 4 lines 49-52).

In the context of a drawing program, to create a graphic on a graphic interface, Buxton's system requires the following: a user operates a trackball with a non-dominant hand to activate the shape palette tool containing a set of pre-defined shapes within the display screen; the user simultaneously and independently moves a mouse with a dominant hand to contact the shape palette tool; the user selects with the mouse the desired pre-defined shape from the shape palette tool; and a user places the selected pre-defined shape on the graphic interface (Ibid., FIG. 4).

In the context of measuring an angle, Buxton shows moving the cursor with one hand to a point on the angle, and simultaneously and independently clicking with the tool using the other hand to obtain a measurement of that point (Ibid., column 19 lines 55-63 and FIG. 22). Buxton states, "[w]hen the user clicks on an object corner through this tool, the coordinates of that corner are reported. If the user clicks again, the system reports the length and slope from the first point to the second. If the user clicks a third time, the system reports the angle made by the last three points clicked." Ibid., column 19 lines 58-63.

Therefore Buxton's method and apparatus operate on the principle of simultaneous and independent movement of the tools and the cursor and operation on the visible representation is accomplished by providing input devices for the user's two hands, for example, a trackball for positioning the tools and a mouse for positioning a cursor and initiating actions (Ibid., column 4 line 66 to column 5 lines 2-6).

To combine the method and apparatus in Buxton with the methods and apparatuses in Echerer, Fenster, and Stockham to arrive at the subject matter of claim 1 and claim 10 would have required a complete reconstruction and change in the basic principles of operation of the method and apparatus in Buxton, as shown below.

Factual analyses above of Echerer, Fenster, and Stockham demonstrate that the methods and apparatuses in these references operate on the principle of a single input device, rather than multiple input devices as used in Buxton.

Factual analysis above demonstrate that the method and apparatus in Buxton cannot operate merely by using a single input device as all the tools in Buxton are controlled

simultaneously and independently from the mouse. For example, with merely a mouse, a user of Buxton could not have measured an angle value quantity that is assigned to a middle point of a continuous triple-point actuating/positioning, because the measuring of the angle using Buxton's method and apparatus is accomplished by simultaneously and independently controlling two input devices (Ibid., column 19 lines 55-53 and FIG. 22). Operation of only a single input device, i.e., merely a mouse alone, does not generate an angle measurement using Buxton's method and apparatus.

Thus the method and apparatus in Buxton would require a complete reconstruction and change in the basic principles of operation, in order to have been combined with Echerer, Fenster, and Stockham. In fact, the purpose of Buxton's method and apparatus is to provide alternatives for methods and apparatuses that use single input devices, by providing a method and apparatus having multiple input devices (Ibid., column 4 lines 4-32).

Therefore, there would have been no motivation to combine the method and apparatus in Buxton with the methods and apparatuses in Echerer, Fenster, and Stockham, as such a combination would have required a complete reconstruction and change in the basic principles of operation of the method and apparatus in Buxton. See M.P.E.P. §2143.01 citing *In re Ratti*, 270 F.2d 810. Therefore, a *prima facie* case that claim 1 and claim 10 of the present invention are obvious has not been made.

Claims 2-3, 5-9, 11-12, 14-19, 26-30, and 32-33 that depend directly or indirectly from claim 1 or claim 10 and incorporate all of the subject matter of claim 1 or claim 10 and contain additional subject matter also are not obvious in light of the cited references.

For these reasons, Appellant asserts that the present claims eomply with 35 U.S.C. §103(a), and respectfully request that rejection of claims 1-3, 5-12, 14-19, 26-30, and 32-33 under 35 U.S.C. §103(a) be withdrawn.

Respectfully submitted,

Sonia K. Guterman, Reg. No. 44,729
Adam M. Schoen, Reg. No. 58,576
Lawson & Weitzen, LLP
88 Black Falcon Avc., Suite 345
Boston, Massachusetts 02210-2481
Tel: (617) 439-4990
Fax: (617) 439-3987

Date:

8. Claims appendix

1. (previously presented) A method for providing and processing a cursored user interaction with a spatially displayed medical image and producing graphics related data on said medical image, wherein said method comprises the steps of:

providing a menu-less graphical interface;

displaying, essentially unobstructed, said medical image in a substantial portion of said graphical interface without the presence of menus, toolbars and control panels on said graphical interface;

controlling a mouse computer interface device having at least one button;

displaying a pointer symbol on said graphical interface, wherein said pointer symbol represents a current position of said mouse on said graphical interface;

tracking a status of each of said at least one button;

detecting a position of said mouse, wherein said position detection step is activated upon actuation of one of said at least one button;

generating one of a plurality of different measurement graphics related to a predefined set of measurement operations on said medical image upon at least one actuation of said at least one button;

when said medical image is displayed on said graphical interface without the presence of menus, toolbars and control panels, enabling the generation of different measurement graphics based only upon actuation of said at least one button of said mouse when said pointer symbol is situated on said medical image such that the measurement graphics are generated without movement of said pointer symbol outside of said medical image, and

enabling the generation of the at least three measurement graphics without requiring a user to define in advance the type of measurement graphic being generated, wherein one of the measurement graphics is an angle value quantity which is assigned to a middle point of a continuous triple-point actuating/positioning.

2. (original) A method as claimed in Claim 1, wherein a single-point actuating/positioning assigns an actual pixel position and/or a pixel intensity quantity to the point in question.

3. (original) A method as claimed in Claim 1, wherein a point pair actuating/positioning assigns a distance value to the pair in question.

4. (cancelcd)

5. (original) A method as claimed in Claim 1, wherein multiple-point actuating/positioning for an open or closed point sequence assigns an area value quantity to a concave region delimited by the sequence in question.

6. (original) A method as claimed in Claim 1, wherein a freehand-drawn actuating/positioning for an open or closed eurve assigns an area value quantity to a concave region delimited by said curve.

7. (original) A method as claimed in Claim 1, wherein multiple-point actuating/positioning for an open or closed sequence assigns a poly-line measurement quantity to the sequence so drawn.

8. (original) A method as claimed in Claim 1, wherein a freehand-drawn actuating/positioning for an open or closed sequence assigns a measurement quantity to the freehand sequence so drawn.

9. (previously presentcd) A method as claimed in Claim 2, further comprising assigning a pixel staticizing to an assigned geometrieal entity.

10. (previously presented) An apparatus arranged to provide and process a cursored user interaction with a spatially displayed medical image, wherein said apparatus comprises:

a menu-less graphical interface arranged to display, essentially unobstructed, said medical image in a substantial portion of said graphical interfacc without the presence of menus, toolbars and control panels on said graphical interface;

a pointing device having at least one button, wherein said pointing device is represented on said graphical interface by a standardized pointer symbol and wherein said pointer

symbol represents a current position of said pointing device within the context of said graphical interface;

a processor configured to detect an actuation of each of said at least one button of said pointing device and track positions of said pointing device;

a processor-internal list of measurement operations, said measurement operations being performed upon at least one actuation of the at least one button and producing at least three corresponding, different measurement graphics on said medical image, said processor being arranged to produce, when said medical image is displayed on said graphical interface without the presence of menus, toolbars and control panels, the at least three different measurement graphics based on said list of measurement operations only upon actuation of said at least one button of said pointing device when said pointer symbol is situated on said medical image such that the measurement graphics are produced without movement of said pointer symbol outside of said medical image; and

assigning means for assigning an angle value quantity to a middle point of a continuous triple-point actuating/positioning.

11. (previously presented) An apparatus as claimed in Claim 10, further comprising assigning means for assigning an actual pixel position and/or a pixel intensity quantity to a point upon a single-point actuating/positioning.

12. (previously presented) An apparatus as claimed in Claim 10, further comprising assigning means for assigning a distance value to a point pair upon a point pair actuating/positioning.

13. (canceled)

14. (previously presented) An apparatus as claimed in Claim 10, further comprising assigning means for assigning an area value quantity to a concave region delimited by an open or closed point sequence upon a multiple-point actuating/positioning for the open or closed point sequence.

15. (previously presented) An apparatus as claimed in Claim 10, further comprising assigning means for assigning an area value quantity to a concave region delimited by an open or closed curve upon a freehand-drawn actuating/positioning for the open or closed curve.

16. (previously presented) An apparatus as claimed in Claim 10, further comprising assigning means for assigning a poly-line measurement quantity to an open or closed sequence upon a multiple-point actuating/positioning of the open or closed sequence.

17. (previously presented) An apparatus as claimed in Claim 10, further comprising assigning means for assigning a measurement quantity to a freehand open or closed sequence upon a freehand-drawn actuating/positioning of the open or closed sequence.

18. (previously presented) An apparatus as claimed in Claim 11, further comprising staticizing means for assigning a pixel staticizing to an assigned geometrical entity.

19. (previously presented) A machine readable computer program, said program implementing a menu-less graphical interface and arranged for processing cursored user interaction with a spatially displayed medical image for producing graphics related data on such image, for implementing a method as claimed in Claim 1, said program being arranged for sensing mouse positionings and/or actuations and for effecting inherent measuring functionalities based on relative such positionings with respect to an associated imaged medical object, and for subsequently outputting representations of said measuring functionalities for displaying in association with said medical object.

20 – 25. (canceled)

26. (previously presented) A method as claimed in Claim 1, wherein the at least three

measurement graphics include a distance measurement between two points, an angle measurement between two lines formed by three points and an area measurement formed by a series of at least three points.

27. (previously presented) A method as claimed in Claim 1, wherein generation of the at least three measurement graphics is enabled immediately after said medical image is displayed on said graphical interface without intervening actuation of said at least one button of said mouse when said pointer symbol is situated on menus, toolbars and control panels.

28. (previously presented) A method as claimed in Claim 1, further comprising determining which of the at least three measurement graphics is generated based on the number of points selected upon actuation of said at least one button of said mouse.

29. (previously presented) A method as claimed in Claim 1, further comprising determining which of the at least three measurement graphics is generated based on the topology of points selected upon actuation of said at least one button of said mouse.

30. (previously presented) A method as claimed in Claim 1, further comprising determining which of the at least three measurement graphics is generated based on the number and topology of points selected upon actuation of said at least one button of said mouse.

31. (canceled)

32. (previously presented) An apparatus as claimed in Claim 10, wherein the at least three measurement graphics include a distance measurement between two points, an angle measurement between two lines formed by three points and an area measurement formed by a series of at least three points.

33. (previously presented) An apparatus as claimed in Claim 10, wherein generation of

the at least three measurement graphics is enabled by said processor immediately after said medical image is displayed on said graphical interfaee without intervcning actuation of said at least one button of said pointing device when said pointer symbol is situated on menus, toolbars and control panels.

9. Evidence appendix

No evidence is submitted pursuant to 37 C.F.R. §§1.130, 1.131, or 1.132.

10. Related proceedings appendix

There are no proceedings related to this appeal.